## CLAIMS

What is claimed is:

1. A method of providing dynamic temperature-adjusted power redundancy for a system, the method comprising:
tracking a number of power supply units, n, that are presently in an up state;
measuring a temperature in which the power supply units are operating; and
determining dynamically a temperature-adjusted number of power supply units, N, that are presently needed to supply power to the system.

2. The method of claim 1, further comprising:
generating an action alert to increase a margin of safety corresponding to a difference between n and N if the margin of safety reaches a minimum acceptable level.

3. The method of claim 1, wherein N is calculated by dividing a peak current drawn by the system by a temperature-adjusted maximum current per power supply and rounding up.

4. The method of claim 3, further comprising:
measuring an actual electrical current used while the system is online to generate an analog current measurement signal;
converting the current measurement signal to digital current measurement data; and
utilizing the current measurement data to dynamically determine the peak current drawn by the system.

5. The method of claim 1, wherein the tracking of n is performed using supply state tracking registers coupled to the power supply units.

6. The method of claim 2, wherein the minimum acceptable level for the margin of safety comprises zero power supply units.

7. The method of claim 2, wherein the minimum acceptable level for the margin of safety comprises more than zero power supply units.

8. The method of claim 2, wherein the action taken comprises hot swapping of a failed component.

9. The method of claim 2, wherein the action taken comprises cold swapping of a failed component.

10. An apparatus for providing power redundantly to a system, the apparatus comprising:
a plurality of power supply units configured to provide power to the system;
a temperature sensor configured to measure a temperature in which the power supply units are operating; and
logic circuitry configured to use the measured temperature to dynamically calculated a temperature-adjusted number of power supply units, N, that are presently needed to supply power to the system.

11. The apparatus of claim 10, further comprising:
supply state tracking registers coupled to the power supply units and configured to hold a state variable for each said supply unit.

12. The apparatus of claim 11, wherein the supply state tracking registers are utilized in tracking a number of power supply units, n, that are presently in an up state.

13. The apparatus of claim 12, further comprising:
a current sensor configured to measure an electrical current drawn by the system,

wherein the measured current is also used in the dynamic calculation of N.

14. The apparatus of claim 13, wherein if a margin of safety corresponding to a difference between n and N reaches a minimum acceptable level, then an alert is generated to take intervening action to increase the margin of safety.

15. The apparatus of claim 11, further comprising:
an output bus bar is coupled to multiple power supply units.

16. The apparatus of claim 15, wherein the current sensor comprises a device coupled to the output bus bar.

17. The apparatus of claim 16, wherein the device comprises an in-line current measuring device.

18. The apparatus of claim 16, wherein the device comprises a passive current measuring device.

19. The apparatus of claim 11, wherein current sensors are integrated with the power supply units.

20. A power subsystem for providing power redundantly to system hardware, the power subsystem comprising:
circuitry for tracking a number of power supply units, n, that are presently in an up state;
a thermal sensor configured to measure a temperature in which the power supply units are operating; and
means for determining dynamically a temperature-adjusted number of power supply units, N, that are presently needed to supply power to the system.